

by a fall of arterial pressure beginning in about twenty minutes and reaching in about an hour a shock level; (b) the effect occurs even though nerves to the leg are severed; it is therefore not of nervous origin; (c) if the bloodvessels (iliac artery and vein) of the leg are tied and the muscle injured the pressure drops only after the blood flow is restored; (d) if a shock pressure has been caused by muscle injury, tying the vessels may be followed by a progressive rise of pressure to the normal level; (e) the effects of muscle injury may pass away with spontaneous recovery of pressure; (f) the lowered pressure after injury is not primarily due to extravasation of blood and lymph into the injured tissues. The measured amount is insufficient.

Application of the Foregoing.—Considerations to the treatment of shock. 1. Every effort should be made to check loss of body heat from the shocked man and to restore to normal a lowered body temperature. Avoid exposing the body; use hot drinks, hot-water bottles, blankets and hot air. 2. Raise as soon as possible an arterial pressure, which persists below the critical level, in order to avoid the damage from oxygen want. 3. Use preferably transfusion of blood to raise pressure, for thus, in addition, oxygen carriers are added to the circulation. In the absence of blood use Bayliss's gum-salt solution, which raises pressure (by increasing volume) and thereby causes more rapid circulation and better employment of the corpuscles as oxygen carriers. 4. Use a tourniquet to separate a shattered, useless part from the rest of the body. Apply it as near as possible to the injured region, amputate proximal to the tourniquet and before removing it. If a tourniquet, used to stop bleeding, is to be left in place for a long period apply it at the most distal effective location. The surgeon must be guided in his decision to save or sacrifice the part by questions of viability and gross infection in the excluded region and danger to the rest of the body from its retention. 5. If ether is used in operating on a shocked man, begin to raise his blood-pressure by transfusion of infusion as soon as the anesthetic is started and continue the process during the operation. Use preferably nitrous oxide and oxygen, in a ratio not exceeding 3 to 1, preceded by morphin. Avoid always deep anesthesia and cyanosis. (The Bethune observations were published in reports to the Subcommittee on Shock of the English Medical Research Committee and in the *Jour. Am. Med. Assn.*, February 23, March 2, 1918. The Dijon experiments have not been published in detail.) P. R.

THERAPEUTICS

UNDER THE CHARGE OF

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Botulism: A Further Report of Cases Occurring in the Pacific Coast States.—DICKSON (*Arch. Int. Med.*, 1918, xxii, 483) reports that prior to September, 1917, there were 23 recorded outbreaks of botulism in the United States in which 87 persons were poisoned and 58 died. In

addition to these there were at least 6 instances in which domestic fowl were poisoned and showed symptoms identical with those produced experimentally by feeding with the toxin of *Bacillus botulinus*. Of the 25 instances of poisoning of human beings or domestic fowl in which the source of poisoning was determined, 17 were shown to have been caused by the ingestion of home-canned vegetables or fruit. Since September, 1917, there have been at least ten additional outbreaks of botulism affecting human beings and four affecting domestic animals. Of these fourteen outbreaks, thirteen were due to the eating of home-canned vegetables or fruits, and from six of these the *Bacillus botulinus* was recovered. In six of the outbreaks the victims were poisoned simply by tasting the contaminated material and in several others the poisoning was caused by salad prepared from uncooked home-canned vegetables. It is probable that the various methods employed in the home-canning of vegetables, etc., are efficient in preventing ordinary spoilage, but they are inefficient if the raw material happens to be contaminated with the spores of *Bacillus botulinus*. These outbreaks indicate that it is unsafe to eat or even to taste home-canned products before boiling, the toxin of *Bacillus botulinus* being rapidly destroyed by heat. Dickson points out that it is of the utmost importance that those who are directing the home-canning industry should recognize that the present methods are not entirely safe. Since the toxin of *Bacillus botulinus* is quickly destroyed by heat the authorities should instruct the people that the danger of poisoning from home-canned products can be avoided if all such food is boiled before it is eaten or even tasted.

Value of Amyl Nitrite Inhalations in the Diagnosis of Mitral Stenosis.

—MORRISON (*British Med. Jour.*, April 20, 1918, p. 452) emphasizes the importance of excluding from the army all men suffering from mitral stenosis. While the diagnosis of advanced cases is relatively simple the diagnosis of incipient cases is more difficult. These early cases do not complain of subjective symptoms, and reliance must be placed on physical signs. Accentuation of the first sound and accentuation and reduplication of the second are the most reliable of the physical signs of incipient mitral stenosis, but are often present in "irritable heart." The differentiation between these two conditions is essential. A presystolic murmur or thrill, or both, is the positive and crowning sign of mitral stenosis. In the absence of one or the other it is inadvisable to make a diagnosis of this lesion. Among patients very near the borderline there are a number who present no suggestion of mitral stenosis when examined standing but who show unequivocal signs when lying down. There are a number who present inconclusive signs when standing, but signs of stenosis become clear in the recumbent position. A further group exhibit no conclusive signs on standing or lying. In these the diagnosis becomes clear when they lie after exercise. At the Military Heart Hospital all cases are auscultated standing and lying and lying after exercise. Amyl nitrite is used as a further test. Its action, like that of exercise, is to increase the flow of blood through the *A-V* ring, a change which favors the production of the murmurs in question. Amyl nitrite inhaled from a 3-minim capsule (until a reaction is evident) will often bring to light a clear presystolic or full dias-

toxic murmur in a patient lying on his back who had exhibited no murmur previously. It will therefore render an early mitral stenosis diagnosable. In some instances a presystolic murmur disappears under amyl nitrite. It is suggested that such a murmur is not due to mitral stenosis, but is a Flint murmur associated with aortic regurgitation.

Clinical Study of the Frequency of Lead, Turpentine and Benzin Poisoning in Four Hundred Painters.—Nearly one-half of all the 402 painters examined by HARRIS (*Arch. Int. Med.*, 1918, xxii, 129) gave evidence of active or latent lead poisoning. All the men examined were engaged in indoor work. Harris classifies the cases as follows: Group I 163, or 40 per cent. Active cases of lead poisoning in which the clinical symptoms spoke frankly for saturnism. Lead was demonstrated in the urine of 65 per cent. of these. Group II. 35, or 8.7 per cent. Latent or inactive cases. In these the clinical symptoms were few, but lead was invariably present in the urine. Group III. Borderline cases in which the clinical findings were suggestive. Group IV. Normal cases. Colic was present in over one-half of the active cases. It was complained of in 3 latent, 9 borderline and 8 negative cases. The severity, frequency and duration of the attacks varied greatly. In some cases the colic would last for as long as forty-eight hours. Magnesium sulphite seemed to be the cathartic of choice and in some cases a daily dose was taken as a prophylactic. Headache occurred in 46 per cent. of the active cases; it was usually severe and frontal in type. Only 3 cases of lead paralysis (wrist-drop) were found. Diminution in muscular strength was noted in over one-half of the active cases. No psychoses were found. The "lead line" was found in only 14 per cent. of the active cases. Harris believes that the blue line on the gums, supposed to be so characteristic of plumbism, is of little significance and is rarely found in those who apply reasonable oral hygiene. Lead was demonstrated in the urine in 65 per cent. of the active cases and in all of the 35 latent cases. The author emphasizes the importance of examining the urine for the presence of lead in the diagnosis of lead poisoning. Granular degeneration of the red blood cells was of rather infrequent occurrence, and, like the lead line, is not considered by Harris to be of much diagnostic value. Marked anemia and loss of strength were very common, occurring in 42 per cent. of the cases. Arteriosclerosis was found in 26 per cent. while evidence of nephritis occurred in 8 per cent. of the cases. Heart irregularities associated with myocardial degeneration were found in 11 active cases. Backache was an extremely common symptom though whether this was due to plumbism or to the strain on the muscles resulting from posture, the author was unable to determine. He did not find that lead poisoning interfered with the Wassermann reaction. Bronchitis was a very common complaint. The author believes that this is due in part to the inhalation of turpentine, benzol and other volatile substances used in painting. Of the pregnancies occurring among the wives of these painters, from 20 to 25 per cent. terminated in miscarriages. The home conditions of nearly all of the painters were found, on the whole, to be good. This does not support the theory that saturnism is due to poor social conditions. The use of alcohol did not appear to be a predisposing cause in lead poisoning. The article closes with a series of sane recommendations for the prevention of occupational diseases among painters.